

AMENDMENTS TO THE CLAIMS

1. (currently amended) A process for extractively removing nickel(0) complexes having phosphorus ligands ~~and/or~~ or free phosphorus ligands from a reaction effluent of a hydrocyanation of unsaturated mononitriles to dinitriles, the process comprising extracting with ~~by extraction by means of~~ a hydrocarbon, ~~a phase separation of~~ and separating the hydrocarbon and of the reaction effluent into two phases ~~being effected~~ at a temperature T (in °C), wherein the content of nickel(0) complexes having phosphorus ligands ~~and/or~~ and free phosphorus ligands in the reaction effluent of the hydrocyanation, depending on the temperature T, is at least y% by weight ~~and, irrespective of the temperature T, is a maximum of 60% by weight, where the numerical value of the minimum content y is given by the equation~~

$y = 0.5 \cdot T + 20$ and T is ~~to be used in the equation as a dimensionless numerical value~~ the maximum content of nickel(0) complexes having phosphorus ligands and free phosphorus ligands is 60% by weight.

2. (original) The process according to claim 1, wherein the reaction effluent of the hydrocyanation is treated before or during the extraction with ammonia or a primary, secondary or tertiary aromatic or aliphatic amine.

3. (Currently amended) The process according to ~~claims 1 to 2~~ claim 1, wherein the reaction effluent is treated with anhydrous ammonia.

4. (Currently amended) The process according to ~~claims 1 to 3~~ claim 1, wherein the hydrocarbon ~~used~~ is selected from cyclohexane, methylcyclohexane, n-heptane or n-octane.

5. (Currently amended) The process according to ~~claims 1 to 4~~ claim 1, wherein the hydrocarbon ~~used~~ is n-heptane or n-octane.

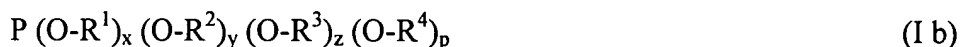
6. (Currently amended) The process according to ~~claims 1 to 5, wherein the~~ claim 1, further comprising removing at least a portion of solids present in the reaction effluent ~~are at least partly removed~~ before the extraction.

7. (Currently amended) The process according to ~~claims 1 to 6~~ claim 1, wherein the ~~phase separation of the extraction is carried out~~ separation of the hydrocarbon is conducted at a temperature of from -15 to 120°C.

8. (Currently amended) The process according to ~~claims 1 to 7, wherein, in that region of claim 1, wherein~~ the extraction provides a high content region in which the content of nickel(0) complexes having phosphorus ligands ~~and/or or~~ free phosphorus ligands is higher than in ~~the other another~~ region, and the temperature is lower than in the other region.

9. (Currently amended) The process according to ~~claims 1 to 8~~ claim 1, wherein the phosphorus ligand is selected from mono- or bidentate phosphines, phosphites, phosphinites and phosphonites.

10. (Currently amended) The process according to ~~claims 1 to 9~~ claim 1, wherein the phosphorus ligand is selected from tritolyl phosphite, bidentate phosphorus chelate ligands, and phosphites of the formula Ib



where R^1 , R^2 and R^3 are each independently selected from o-isopropylphenyl, m-tolyl and p-tolyl, R^4 is phenyl, x is 1 or 2, and y, z, p are each independently 0, 1 or 2, with the proviso that $x+y+z+p = 3$; and mixtures thereof.

11. (Currently amended) The process according to ~~claims 1 to 10~~ claim 1, wherein the mononitrile is 3-pentenitrile and the dinitrile is adiponitrile.

12. (Currently amended) The process according to ~~claims 1 to 11~~ claim 1, wherein the reaction effluent is obtained by reacting 3-pentenitrile with hydrogen cyanide in the presence of at least one nickel(0) complex having phosphorus ligands, ~~if appropriate in the presence of at least one Lewis acid.~~

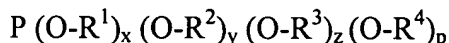
13. (New) A process for removing nickel(0) complexes having phosphorus ligands and phosphorous compounds from a reaction effluent comprising:

adding a hydrocarbon to the reaction effluent to provide a two phase system in which a first phase is enriched in the nickel(0) complexes having phosphorus ligands and phosphorus compounds and a second phase is enriched with dinitriles at a temperature T (°C), wherein the maximum concentration of the nickel(0) complexes having phosphorus ligands and phosphorus compounds in the reaction effluent is 60% by weight and the minimum concentration of the nickel(0) complexes having phosphorus ligands and phosphorus compounds is determined by the equation, $y = 0.5T + 20$; and

separating the two phase system to provide an isolated first phase and an isolated second phase.

14. (New) The process according to claim 13, wherein the two phase system has an extraction coefficient of 0.8 to 5 as defined by the ratio of mass content of the nickel(0) complexes having phosphorus ligands and phosphorus compounds in the first phase to mass content of the nickel(0) complexes having phosphorus ligands and the phosphorus compounds second phase.

15. (New) The process according to claim 13, wherein the phosphorus ligands and compounds is selected from tritolyl phosphate, bidentate phosphorus chelate ligands, and phosphites of the formula Ib



where R^1 , R^2 and R^3 are each independently selected from o-isopropylphenyl, m-tolyl and p-tolyl, R^4 is phenyl, x is 1 or 2, and y, z, p are each independently 0, 1 or 2, with the proviso that $x+y+z+p = 3$; and mixtures thereof.

16. (New) The process according to claim 13, wherein the reaction effluent is produced in a hydrocyanation process for converting 3-pentenitrile to adiponitrile.

17. (New) The process according to claim 13, wherein the hydrocarbon is selected from cyclohexane, methylcyclohexane, n-heptane or n-octane.

18. (New) The process according to claim 13, further comprising treating the reaction effluent before or during the extraction with ammonia or a primary, secondary or tertiary aromatic or aliphatic amine.